General

Guideline Title

Safe midwifery staffing for maternity settings.

Bibliographic Source(s)

National Institute for Health and Care Excellence (NICE). Safe midwifery staffing for maternity settings. London (UK): National Institute for Health and Care Excellence (NICE); 2015 Feb 27. 65 p. (NICE guideline; no. 4).

Guideline Status

This is the current release of the guideline.

This guideline meets NGC's 2013 (revised) inclusion criteria.

Recommendations

Major Recommendations

The wording used in the recommendations in this guideline (e.g., words such as 'ensure', 'must', and 'consider') denotes the strength of the recommendation and is defined at the end of the "Major Recommendations" field.

The recommendations in this guideline cover all aspects of care provided by a midwife employed to provide National Health Service (NHS)-funded maternity care in:

- All maternity services (for example, clinics, home visits, maternity units)
- All settings where maternity care is provided (for example, home, community, free-standing and alongside midwifery-led units, hospitals including obstetric units, day assessment units, and fetal and maternal medicine services)
- The whole maternity pathway (pre-conception, antenatal, intrapartum and postnatal)

Recommendations in the first section focus on the responsibilities that organisations have and the actions they should take to support safe midwifery staffing requirements in all maternity settings.

The recommendations in the second section describe the process and the factors to consider when setting midwifery staffing establishments. The process described in this section could also be used as the specification for a toolkit for setting the midwifery staffing establishment.

Recommendations in the third section are about ensuring that maternity services can respond to increased demand for midwifery staff and to differences between the number of midwives needed and the numbers available.

Recommendations in the final section are about monitoring whether safe midwifery staffing requirements are being met. This includes

recommendations to review midwifery staffing establishments and adjust them if necessary.

Organisational Requirements

These recommendations are for commissioners, trust boards and senior management.

Focus on Care for Women and Babies

Ensure women, babies and their families receive the midwifery care they need, including care from specialist and consultant midwives, in all:

- Maternity services (for example, pre-conception, antenatal, intrapartum and postnatal services, clinics, home visits and maternity units)
- Settings where maternity care is provided (for example, home, community, freestanding and alongside midwifery-led units, hospitals including obstetric units, day assessment units, and fetal and maternal medicine services)

This should be regardless of the time of the day or the day of the week.

Accountability for Midwifery Staffing Establishments

Develop procedures to ensure that a systematic process is used to set the midwifery staffing establishment (see "Setting the Midwifery Staffing Establishment") to maintain continuity of maternity services and to provide safe care at all times to women and babies in all settings. The board should ensure that the budget for maternity services covers the required midwifery staffing establishment for all settings.

Ensure that maternity services have the capacity to do the following:

- Deliver all pre-conception, antenatal, intrapartum and postnatal care needed by women and babies
- Provide midwifery staff to cover all the midwifery roles needed for each maternity service, including coordination and oversight of each service
- Allow for locally agreed midwifery skill mixes (for example, specialist and consultant midwives, practice development midwives)
- Provide a woman in established labour with supportive one-to-one care
- Provide other locally agreed staffing ratios
- Allow for:
    - Uplift (which may include consideration of annual leave, maternity leave, paternity leave, study leave including mandatory training and continuing professional development, special leave, and sickness absence)
    - Time for midwives to give and receive supervision in line with professional guidance
    - Ability to deal with fluctuations in demand (such as planned and unplanned admissions and transfers, and daily variations in midwifery requirements for intrapartum care)

Ensure that maternity services use local records of predicted midwifery requirements and variations in demand for midwifery staff to help plan ahead and respond to anticipated changes (for example, local demographic changes and women's preferences for place of care).

Develop procedures to ensure that the midwifery staffing establishment is developed by midwives with training and experience in setting staffing establishments. Procedures should ensure that the midwifery staffing establishment is approved by the head of midwifery and the director of nursing and midwifery or chief nurse.

Ensure a senior midwife or another responsible person is accountable for the midwife rosters that are developed from the midwifery staffing establishment.

Ensure that there are enough midwives with the experience and training to assess the differences in the number and skill mix of midwives needed and number of midwives available for each shift.

Organisational Level Actions to Enable Responsiveness to Variation in Demand for Maternity Services

Develop escalation plans to address demand for maternity services and variation in the risks and needs of women and babies in the service.

Develop escalation plans in collaboration with midwives who are responsible for determining midwifery staffing requirements at unit or departmental level.

Ensure that escalation plans contain actions to address unexpected variation in demand for maternity services and midwifery needs. These plans could include:

- Sourcing extra staff such as using:

    - On-call staff
    - Temporary staff
- Redistributing the midwifery workload to other suitably trained and competent staff
- Redeploying midwives to and from other areas of care
- Rescheduling non-urgent work

Action in relation to these plans must not cause midwifery red flag events to occur in other areas. Only consider service cancellations or closures as a last resort.

Actions within the escalation plans related to midwifery staffing should be approved by the head of midwifery and director of nursing and midwifery or chief nurse.

Monitoring the Adequacy of Midwifery Staffing Establishment

Review the midwifery staffing establishment at board level at least every 6 months, ensuring the review includes analysis of:

- Data on variations in maternity service demand
- Midwifery red flag events (see Box 3 below)
- Safe midwifery indicators (see Box 4 below and Section 7 in the original guideline document)

Review the midwifery staffing establishment at board level more often than every 6 months if the head of midwifery or director of nursing and midwifery identifies that this is needed. For example if:

- The implementation of escalation plans is increasing
- Local services are reconfigured
- Midwifery staffing deficits occur frequently
- The quality of the service has deteriorated as indicated by complaints, midwifery red flag events or other quality measures
- Staff absenteeism is increasing
- There is unexpected increase or decrease in demand for maternity services

Change the midwifery staffing establishment if the review indicates this is needed and consider flexible approaches such as adapting shifts and amending assigned location.

Monitoring and Responding to Changes

Ensure that maternity services have procedures in place for monitoring and responding to unexpected changes in midwifery staffing requirements.

Ensure maternity services have procedures in place for:

- Informing members of staff, women, family members and carers about what midwifery red flag events (see Box 3 below) are and how to report them
- The registered midwife in charge of the shift or service to take appropriate action in relation to midwifery red flag events
- Recording and monitoring midwifery red flag events as part of exception reporting

Involve midwives in developing and maintaining midwifery staffing policies and governance, including escalation planning.

Ensure that actions in relation to midwifery red flag events or unexpected changes in midwifery staffing requirements:

- Take account of women and babies who need extra support from a midwife.
- Do not cause midwifery red flag events to occur in other areas of the maternity service.

Promoting Staff Training, Education and Time for Indirect Care Activities

Ensure that midwives have time for:

- Participating in continuing professional development, statutory and mandatory training, and supervision
- Receiving training, mentoring and preceptorship
- Providing training and mentoring for student midwives or other maternity service staff
- Supervising and assessing the competencies of other midwives and non-midwifery staff (including maternity support workers)
- Taking part in indirect care activities such as clinical governance, safeguarding, administration and liaison with other professionals

- Setting the midwifery staffing establishment
- Assessing the midwifery requirements for each day or shift, including collecting and analysing data

Setting the Midwifery Staffing Establishment

These recommendations are for registered midwives (or other authorised people) who are responsible for determining the midwifery staffing establishment.

Determine the midwifery staffing establishment for each maternity service (for example, pre-conception, antenatal, intrapartum and postnatal services) at least every 6 months.

Undertake a systematic process to calculate the midwifery staffing establishment. The process (or parts of the process) could be supported by a National Institute for Health and Care Excellence (NICE) endorsed toolkit (if available). The process should contain the following components:

- Use historical data about the number and care needs of women who have accessed maternity services over a sample period (for example, the past 12 months or longer).
- Estimate the total maternity care hours needed over the sample period based on a risk categorisation of women and babies in the service. This should consider the following:
    - Risk factors, acuity and dependency (see Box 1 part A below for examples)
    - The estimated time taken to perform all routine maternity care activities (see Box 2 part A below for examples)
    - The estimated time taken to perform additional activities (see Box 2 part B below for examples)
- Divide the total number of maternity care hours by the number of women in the time period to determine the historical average maternity care hours needed per woman.
- Use data on the number of women who are currently accessing the maternity service and the trend in new bookings to predict the number of women in the service in the next 6 months.
- Multiply the predicted number of women in the service over the next 6 months by the historical average maternity care hours needed per woman to determine the predicted total maternity care hours needed over the next 6 months.
- From the total predicted maternity care hours, identify the hours of midwife time and skill mix to deliver the maternity care activities that are required. Take account of:
    - Environmental factors including local service configuration (see Box 1 part B below for examples)
    - The range of staff available, such as maternity support workers, registered nurses or general practitioner (GPs), and the activities that can be safely delegated to or provided by them (see Box 1 part C below for examples)
- Allow for the following:
    - One-to-one care during established labour (unless already accounted for in the historical data)
    - More than one-to-one care during established labour if circumstances require it (unless already accounted for in the historical data)
    - Any staffing ratios for other stages of care that have been developed locally depending on the local service configuration and the needs of individual women and babies
    - The locally defined rate of uplift (for example, to allow for annual leave, maternity leave, paternity leave, study leave, special leave and sickness absence)
- Divide the total midwife hours by 26 to give the average number of midwife hours needed per week over the next 6 months.
- Divide the weekly average by the number of hours for a full time working week to determine the number of whole time equivalents needed for the midwife establishment over the next 6 months.
- Convert the number of whole time equivalents into the annual midwife establishment.

Figure 1 in the original guideline document summarises this process.

Base the number of whole-time equivalents on registered midwives, and do not include the following in the calculations:

- Registered midwives undertaking a Local Supervising Authority Programme
- Registered midwives with supernumerary status (this may include newly qualified midwives, or midwives returning to practice)
- Student midwives
- The proportion of time specialist and consultant midwives who are part of the establishment spend delivering contracted specialist work (for example, specialist midwives in bereavement roles)
- The proportion of time midwives who are part of the establishment spend coordinating a service, for example the labour ward

Use professional judgement at each stage of the calculation and when checking the calculations for the midwifery staffing establishment.

Base the midwife roster on the midwifery staffing establishment calculations, taking into account any predictable peaks in activity, and risk

categorisation of women and babies (for example, during the day when midwife activities are likely to be planned, or for a service dealing with higher risk category women and babies).

Box 1. Examples of Factors to Consider When Assessing Maternity Care Needs

A. Risk, Acuity and Dependency of Each Woman and Baby	B. Environmental Factors	C. Staffing Factors
Risk: see Box 2 for maternity care activities that address midwifery staffing	Location of service configuration or models of care, for example:	Availability of non-midwifery staff, for example:
• Age • Cardiovascular • Complications (previous) • Current pregnancy • Disabilities • Endocrinological • Fetal • Gastrointestinal • Gynaecological • Haematological • Immunological • Infective • Learning difficulties • Neurological • Obesity • Psychiatric • Renal • Respiratory • Skeletal • Substance use Antenatal acuity/dependency: • No significant intervention required • Induction of labour • Requires specialised care • Requires treatment Intrapartum acuity/dependency: • Apgar score • Birth trauma • Birth weight • Caesarean section • Death • Duration of labour • Gestation • Operative vaginal delivery • Post-delivery emergency Postnatal acuity/dependency: • Moderate dependency • Readmission • Straight forward • Transfer out	• Consultant-led care • Midwife-led care • Shared care Unit/department layout, for example: • Number of beds, units, bays (and distance between them) Availability of and proximity to related services, for example: • Breastfeeding clinics • Fetal medicine department • Maternal medicine department • Other specialist centres Local geography and availability of neighbouring maternity services, for example: • Travel time between services	• Allied health professionals (e.g., sonographers) • Clerical staff and data inputters • GPs • Maternity support workers • Medical consultants • Nursery nurses • Registered nurses • Temporary staff

A. Risk, Acuity and Dependency of Each Woman and Baby	B. Environmental Factors	C. Staffing Factors

Also see Box 2 for maternity care activities that affect midwifery staffing.

Box 2. Examples of Maternity Care Activities That Affect Midwifery Staffing

Antenatal	Intrapartum	Postnatal	All Stages of Care
Part A: Examples of routine care activities			
Booking appointment	Routine intrapartum care including assessment, support, monitoring, management	Routine postnatal care including observations, hygiene, discharge planning	Routine administration including care planning, case notes, referrals
Antenatal appointment including assessment, education, lifestyle advice and fetal monitoring	One-to-one care during established labour	Newborn assessment/examination/screening/vaccination (e.g., heel prick, hearing, vitamin K administration)	Checking/ordering/chasing (e.g., preparing medication, checking specialist equipment, checking blood results)
Antenatal screening and tests (e.g., fetal heart auscultation/scan)		Postnatal appointment including assessment, education, advice and infant monitoring	Transfers
Part B: Examples of activities that may need additional time			
Admission to labour ward or day unit	Additional monitoring/interventions (e.g., cannula, epidural, fetal monitoring, induction of labour)	Maternal or neonatal death including arrangements after death and support for relatives and carers	Case conferences
Providing additional antenatal screening and tests (e.g., fetal anomaly)	Managing complications (e.g., managing fetal distress, complicated birth)	Managing complications (e.g., postpartum haemorrhage, difficulty establishing infant feeding)	Additional time for the following: • Consideration of preferred place of birth (e.g., home birth) • Providing care for women needing specialist input (e.g., female genital mutilation) • Managing specific clinical conditions (e.g., diabetes) • Managing specific social issues (e.g., child protection, safeguarding) • Communicating with women and carers/family including

Note: These activities are only a guide and other activities may also be considered.

For further information please see the relevant NICE guidance which is brought together in NICE Pathways.

Antenatal	Intrapartum	Postnatal	All Stages of Care
			those with sensory impairment or language difficulties • Providing additional education, training and emotional support (e.g., new medication, equipment or diagnosis in baby/mother)
Providing antenatal vaccinations (e.g., flu)	Specialising/high dependency/intensive care		Coordination of service, or liaison with multidisciplinary team or other services Escorts/transitional care
Note: These activities are only a guide and there may be other activities that could also be considered. For further information please see the relevant NICE guidance which is brought together in NICE Pathways.			

Assessing Differences in the Number and Skill Mix of Midwives Needed and the Number of Midwives Available

These recommendations are for registered midwives in charge of assessing the number of midwives needed on a day-to-day basis.

As a minimum, assess the differences between the number of midwives needed and the number of midwives available for each maternity service in all settings:

- Once before the start of the service (for example, in antenatal or postnatal clinics) or the start of the day (for example, for community visits), or
- Once before the start of each shift (for example, in hospital wards)

This assessment could be facilitated by using a toolkit endorsed by NICE.

During the service period or shift reassess differences between the midwifery staff needed and the number available when:

- There is unexpected variation in demand for maternity services or midwifery care (for example, if there is an unexpected increase in the number of women in established labour)
- There is unplanned staff absence during the shift or service
- Women and babies need extra support or specialist input
- A midwifery red flag event has occurred (see Box 3 below)

Consider the following when undertaking the assessment:

- Risk factors and risk categorisation, acuity and dependency of each woman and baby in the service (use Box 1 part A above as a prompt)
- Environmental factors (use Box 1 part B above as a prompt)
- Time taken to perform the necessary midwifery care activities (use Box 2 parts A and B above as a prompt)

Follow escalation plans if the number of midwives available is different from the number of midwives needed (see "Organisational Requirements" above). Service cancellations or closures should be the last option. Take into account the potential of cancellations or closures to limit women's choice and to affect maternity service provision and the reputation of the organisation.

If a midwifery red flag event occurs (see Box 3 below for examples), the midwife in charge of the service or shift should be notified. The midwife in charge should determine whether midwifery staffing is the cause, and the action that is needed. Action may include allocating additional midwifery staff to the service.

Record midwifery red flag events (including any locally agreed midwifery red flag events) for reviewing, even if no action was taken.

Box 3. Midwifery Red Flag Events

A midwifery red flag event is a warning sign that something may be wrong with midwifery staffing. If a midwifery red flag event occurs, the midwife in charge of the service should be notified. The midwife in charge should determine whether midwifery staffing is the cause, and the action that is needed.

- Delayed or cancelled time critical activity
- Missed or delayed care (for example, delay of 60 minutes or more in washing and suturing)
- Missed medication during an admission to hospital or midwifery-led unit (for example, diabetes medication)
- Delay of more than 30 minutes in providing pain relief
- Delay of 30 minutes or more between presentation and triage
- Full clinical examination not carried out when presenting in labour
- Delay of 2 hours or more between admission for induction and beginning of process
- Delayed recognition of and action on abnormal vital signs (for example, sepsis or urine output)
- Any occasion when 1 midwife is not able to provide continuous one-to-one care and support to a woman during established labour

Other midwifery red flags may be agreed locally.

Monitoring and Evaluating Midwifery Staffing Requirements

These recommendations are for senior midwives working in maternity services.

Monitor whether the midwifery staffing establishment adequately meets the midwifery care needs of women and babies in the service using the safe midwifery staffing indicators in Box 4 below. Consider continuous data collection of these safe midwifery staffing indicators (using data already routinely collected locally where available) and analyse the results. Section 7 in the original guideline document gives further guidance on these indicators.

Compare the results of the safe midwifery staffing indicators with previous results at least every 6 months.

Analyse reported midwifery red flag events detailed in Box 3 above and any additional locally agreed midwifery red flag events and the action taken in response.

Analyse records of differences between the number of midwives needed and those available for each shift to inform planning of future midwifery establishments.

Review the adequacy of the midwifery staffing establishment (see "Organisational Requirements") if indicated by the analysis of midwifery red flag events, midwifery staffing indicators or differences between the number of midwives needed and those available.

Box 4. Safe Midwifery Staffing Indicators

Indicators are positive and negative events that should be reviewed when reviewing the midwifery staffing establishment, and should be agreed locally.

Outcome Measures Reported by Women in Maternity Services

Data for the following indicators can be collected using the Maternity Services Survey :

- Adequacy of communication with the midwifery team
- Adequacy of meeting the mother's needs during labour and birth
- Adequacy of meeting the mother's needs for breastfeeding support
- Adequacy of meeting the mother's postnatal needs (postnatal depression and posttraumatic stress disorder) and being seen during the postnatal period by the midwifery team

Outcome Measures

- Booking appointment within 13 weeks of pregnancy (or sooner): record whether booking appointments take place within 13 weeks of

pregnancy (or sooner). If the appointment is after 13 weeks of pregnancy the reason should also be recorded, in accordance with the Maternity Services Data Set.
- Breastfeeding: local rates of breastfeeding initiation can be collected using NHS England's Maternity and Breastfeeding data return.
- Antenatal and postnatal admissions, and readmissions within 28 days: record antenatal and postnatal admission and readmission details including discharge date. Data can be collected from the Maternity Services Data Set.
- Incidence of genital tract trauma during the labour and delivery episode, including tears and episiotomy. Data can be collected from the Maternity Services Data Set.
- Birth place of choice: record of birth setting on site code of intended place of delivery, planned versus actual. Data can be collected from the Maternity Services Data Set.

Staff-reported Measures

- Missed breaks: record the proportion of expected breaks that were unable to be taken by midwifery staff
- Midwife overtime work: record the proportion of midwifery staff working extra hours (both paid and unpaid)
- Midwifery sickness: record the proportion of midwifery staff's unplanned absence
- Staff morale: record the proportion of midwifery staff's job satisfaction. Data can be collected using the NHS staff survey.

Midwifery Staff Establishment Measures

Data can be collected for some of the following indicators from the NHS England and Care Quality Commission joint guidance to NHS trusts on the delivery of the 'Hard Truths' commitments on publishing staffing data regarding nursing, midwifery and care staff levels and more detailed data collection advice since provided by NHS England.

- Planned, required and available midwifery staff for each shift: record the total midwife hours for each shift that were planned in advance, were deemed to be required on the day of the shift, and that were actually available
- The number of women in established labour and the number of midwifery staff available over a specified period, for example 24 hours
- High levels and/or ongoing reliance on temporary midwifery staff: record the proportion of midwifery hours provided by bank and agency midwifery staff on maternity wards. (The agreed acceptable levels should be established locally.)
- Compliance with any mandatory training in accordance with local policy (this is an indicator of the adequacy of the size of the midwifery staff establishment).

Note: Other safe midwifery staffing indicators may be agreed locally.

Definitions

Strength of Recommendations

- Recommendations using directive language such as 'ensure', 'provide' and 'perform' are used to indicate the Committee was confident that a course of action would lead to safe midwifery care.
- If the quality of the evidence or the balance between benefits and harms means that more time should be taken to decide on the best course of action, the Committee has used 'consider'.
- Recommendations that an action 'must' or 'must not' be taken are usually included only if there is a legal duty (for example, to comply with health and safety regulations).

Clinical Algorithm(s)

A National Institute for Health and Care Excellence (NICE) care pathway titled "Safe Midwifery Staffing for Maternity Settings Overview" is available from the NICE Web site.

Scope

Disease/Condition(s)

- Maternal health in the pre-conception period
- Pregnancy
- Labour and delivery
- Maternal and neonatal health in the postnatal period

Guideline Category

Management

Clinical Specialty

Family Practice

Nursing

Obstetrics and Gynecology

Pediatrics

Intended Users

Advanced Practice Nurses

Hospitals

Nurses

Other

Patients

Public Health Departments

Guideline Objective(s)

To make recommendations on safe midwifery staffing requirements for maternity settings, based on the best available evidence and focusing on the pre-conception, antenatal, intrapartum and postnatal care provided by midwives in all maternity settings, including: at home, in the community, in day assessment units, in obstetric units, and in midwifery-led units (both alongside hospitals and free-standing)

Target Population

Women attempting to get pregnant, pregnant women, women in labour, and neonates and mothers up to 6 weeks postnatally receiving midwifery services in the National Health Service (NHS) (United Kingdom)

Interventions and Practices Considered

1. Organisational requirements
    - Ensuring women, babies, and their families receive the midwifery care they need from specialist and consultant midwives
    - Ensuring accountability for midwifery staffing establishment
    - Organisational level actions to enable responsiveness to variation in demand for maternity services
    - Monitoring the adequacy of midwifery staffing establishment
    - Monitoring and responding to changes
    - Promoting staff training, education, and time for indirect care activities

2. Setting the midwifery staffing establishment
3. Assessing differences in the number and skill mix of midwives needed and the number of midwives available
4. Monitoring and evaluating midwifery staffing requirements

Major Outcomes Considered

- Any midwifery sensitive outcome, such as:
  - Serious preventable events (maternal death, stillbirth, neonatal death, etc.)
  - Delivery of midwifery care (women offered minimum set of antenatal tests, etc.)
  - Reported feedback (experience/satisfaction of woman, partner or staff)
  - Any other outcome (costs, litigation, training, sickness, etc.)
- Association between midwifery staffing levels and maternal and neonatal outcomes
- Cost-effectiveness

Methodology

Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

The Safe Staffing Advisory Committee considered evidence from three evidence review reports (see the "Availability of Companion Documents" field) to support the guideline:

Evidence Review 1: Decision Support Approaches and Toolkits for Identifying Midwifery Staffing Requirements

Methods

A search strategy and review protocol were developed to identify primary studies comparing the use of a particular approach to another approach or to standard methods for estimating midwifery staffing and skill mix (see Appendices A and B in Evidence Review 1).

A date restriction was imposed on all the systematic reviews that were conducted for the midwifery staffing guideline, including this review, as it was deemed inappropriate to include all evidence. This is because midwifery practices have advanced over the years, making older studies of limited relevance to midwifery practice today. A cut-off date of 1998 was chosen following advice from a topic expert, and studies published before this date or which used data from before this date were excluded.

The systematic search identified 1799 references. An additional 37 references were identified through screening the searches for other review questions included in the related evidence reviews.

A screening checklist was developed with the purpose of enabling non-relevant references to be excluded rapidly (see Appendix C in Evidence Review 1). One reviewer applied the screening checklist to all identified references. A second reviewer performed a consistency check by screening the title and abstracts of 10% of the references which were selected at random against the same checklist. Any disagreements between the two reviewers were discussed and resolved. Overall there was 100% agreement between the two reviewers.

Search Strategy

- Medline and Medline in-process; Platform: Ovid; Search date: 17/6/2014
- EMBASE; Platform: Ovid; Search date: 17/6/2014
- Health Management Information Consortium; Platform: Ovid; Search date: 19/6/2014
- Cochrane Database of Systematic Reviews; Database of Abstracts of Reviews of Effects; Cochrane Central Register of Controlled Trials; Health Technology Assessment Database; Platform: Wiley; Search date: 19/6/2014
- Cumulative Index to Nursing and Allied Health (CINAHL); Platform: EBSCO; Search date: 19/6/2014

- British Nursing Index (BNI); Platform: HDAS; Search date: 19/6/2014

See Section 4.1.1.1 for full details of the literature search.

Evidence Review 2: Safe Midwifery Staffing for Maternity Settings: the Relationship between Midwifery Staffing at a Local Level and Maternal and Neonatal Outcomes, and Factors Affecting These Requirements

Search Methods

The search was carried out by a National Institute for Health and Care Excellence (NICE) information specialist and detailed methods for the search are provided in Appendix C in Evidence Review 2.

Briefly, searches were performed in literature databases (Medline and Medline-in process, EMBASE, Cochrane Database of Systematic Reviews, Database of Abstracts of Reviews of Effects, Health Management Information Consortium, Cochrane Central Register of Controlled Trials, Health Technology Assessment Database, CINAHL, BNI) and on key Web sites in June 2014. Systematic reviews were used for citation searching and as sources of potentially relevant primary studies. The search included English language primary studies from 1998 and onwards. This is because midwifery practices have advanced over the years, making older studies of limited relevance to midwifery practice today. This cut-off date was chosen following advice from a topic expert. Studies also had to be performed in Organisation for Economic Cooperation and Development (OECD) countries for inclusion, to increase relevance of included evidence to the UK setting.

Evidence Review 3: Safe Midwife Staffing for Maternity Settings: Economic Evidence Review

Search Strategy

A search strategy and review protocol were developed to identify primary economic studies comparing the use of a particular approach to another approach, or maximise outcomes in relation to resources related to the number of midwife staffing and skill mix (see Appendices A and B in Evidence Review 3). Databases searched include Medline, Medline in-process, Health Management Information Consortium, CINAHL using an economic filter. Separate searches were carried out on the National Health Service (NHS) Economic Evaluations Database, Econlit, Health Economic Evaluations Database, Tufts Cost Effectiveness Analysis Registry.

A date restriction was imposed on all the systematic reviews that were conducted for the midwife staffing guideline, including this review, as it was deemed inappropriate to include all evidence. This is because midwifery practices have advanced over the years, making older studies of limited relevance to midwifery practice today. A cut-off date of 1998 was chosen following advice from a topic expert, and studies published before this date or which used data from before this date were excluded. Studies published after June 2014 were not considered in this review.

The systematic search identified 621 references. An additional 16 references were identified through screening the searches for other review questions included in the related evidence reviews.

Inclusion and Exclusion Criteria

The inclusion and exclusion criteria are specified in the protocol (see Appendix B in Evidence Review 3). The protocol mirrors the inclusion and exclusion criteria used for the other evidence reviews produced for this guideline.

All common types of economic study design were considered. The 'Developing NICE guidelines - the manual' outlines a preference for cost-utility analysis. This systematic review considered a wider range of types of analysis and included cost utility analysis, cost consequences analysis, cost effectiveness analysis, cost benefit analysis, cost minimisation analysis and any cost-comparative analysis which were specific to midwife staffing numbers or skill mix. Any intervention which considered midwife staffing levels or skill mix was included.

English language studies are included, all non-English language were excluded due to a lack of capacity to translate into English. All midwife staffing in non-maternity settings or obstetric settings were excluded as these were outside of the scope of the guideline. All studies from non-OECD countries were excluded due to limited applicability to the UK NHS.

Number of Source Documents

Evidence Review 1: Decision Support Approaches and Toolkits for Identifying Midwifery Staffing Requirements

Overall, 31 references were selected and retrieved for full text appraisal. An additional reference was identified from screening of the reference list and full text bringing the total number of studies that were considered to 32. All 32 studies were appraised and two articles met the criteria for inclusion in this review. See Figure 1 in Evidence Review 1 (see the "Availability of Companion Documents" field) for a review flow chart.

Evidence Review 2: Safe Midwifery Staffing for Maternity Settings: the Relationship between Midwifery Staffing at a Local Level and Maternal and Neonatal Outcomes, and Factors Affecting These Requirements

The searches retrieved 5526 unique citations; these were read at title level to remove any clearly non-relevant material (first pass appraisal; see protocol in Appendix B of Evidence Review 2 [see the "Availability of Companion Documents" field] for details). This led to the selection of 748 studies to be appraised at title and abstract level (second pass appraisal; see Appendix B of Evidence Review 2). An additional 55 studies (46 after duplicates removed) were identified as potentially relevant during appraisal of the searches for the related reviews or through citation in relevant studies, or through submission to the National Institute for Health and Care Excellence (NICE). These studies were also appraised at title and abstract level. Of these 794 studies, 149 citations were selected for retrieval and full text appraisal using the same criteria as the second pass appraisal. Five of the selected studies were not able to be obtained in full text (see Appendix A of Evidence Review 2 for references); assessment of their titles and abstracts suggested that they were not of high relevance to the current review (likely to be news items, be in isolated populations potentially of low relevance to the National Health Service [NHS], or assess methods of calculating required for midwife staffing). Of the full texts appraised, 8 studies were selected for inclusion.

See Figure 1 in Evidence Review 2 for a PRISMA flowchart.

Evidence Review 3: Safe Midwife Staffing for Maternity Settings: Economic Evidence Review

All 637 titles and abstracts identified from the search strategy were independently assessed by two reviewers. All abstracts considered to potentially meet the inclusion and exclusion criteria by either reviewer were obtained in full.

90 full-texts of studies were assessed by one reviewer using the pre-defined inclusion and exclusion criteria in Appendix B in Evidence Review 3. A second reviewer assessed full-texts when the first reviewer could not make a clear decision on inclusion. One study was identified that met the criteria for inclusion in this evidence review. One additional unpublished study (at time of the search) was identified and assessed as relevant to the evidence review.

Figure 1 in Evidence Review 3 presents a summary of the search and selection process flow.

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Evidence Review 1: Decision Support Approaches and Toolkits for Identifying Midwifery Staffing Requirements

Not applicable

Evidence Review 2: Safe Midwifery Staffing for Maternity Settings: the Relationship between Midwifery Staffing at a Local Level and Maternal and Neonatal Outcomes, and Factors Affecting These Requirements

Quality Assessment and Applicability Appraisal

Quality was assessed using modified versions of the checklists in the draft National Institute for Health and Care Excellence (NICE) unified methods manual for 'quantitative studies reporting correlations and associations' for the correlation and cohort studies, and for 'quantitative intervention studies' for the randomised controlled trial (RCT) (see protocol in Appendix B of Evidence Review 2 for details [see the "Availability of Companion Documents field]). Modifications were made to remove less relevant items from the checklists (e.g., given the type of intervention being studied blinding was not feasible, therefore the item on blinding was removed), or to make more relevant to the current review by making the considerations under the individual items more specific (e.g., under item 4.2 in the correlation study checklist on analytical methods, querying whether there was adjustment for clustering of data in units/wards/hospitals, and adjustment/control for ward/unit/hospital characteristics where relevant).

Quality ratings include:

> [++] All or most of the checklist criteria have been fulfilled, and where they have not been fulfilled the conclusions are very unlikely to alter.
> [+] Some of the checklist criteria have been fulfilled, and where they have not been fulfilled, or are not adequately described, the conclusions are unlikely to alter.

[-] Few or no checklist criteria have been fulfilled and the conclusions are likely or very likely to alter.

Evidence Review 3: Safe Midwife Staffing for Maternity Settings - Economic Evidence Review

Not applicable

Methods Used to Analyze the Evidence

Meta-Analysis

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

The Safe Staffing Advisory Committee considered evidence from three evidence review reports (see the "Availability of Companion Documents" field) to support the guideline:

Evidence Review 1: Decision Support Approaches and Toolkits for Identifying Midwifery Staffing Requirements

Review Strategies

The appropriate National Institute for Health and Care Excellence (NICE) methodology checklist was used as a guide to appraise the quality of individual studies (see the "Rating Scheme for the Strength of the Evidence" field). Data on all included studies were extracted into evidence tables. Where statistically possible, a meta-analytical approach was used to give an overall summary effect.

Evidence Review 2: Safe Midwifery Staffing for Maternity Settings: the Relationship between Midwifery Staffing at a Local Level and Maternal and Neonatal Outcomes, and Factors Affecting These Requirements

Assessing Study Quality

This assessment was based on the appropriate NICE quality checklists in the draft unified manual and the modified quality checklists used in the first safe staffing review (see the "Rating Scheme for the Strength of the Evidence" field). The quality checklist was applied to all studies selected for inclusion at full text, with 10% double appraisal. Any disagreements were resolved by discussion, with recourse to a third analyst if needed.

Data Extraction Templates

Data was extracted and provided in evidence tables (which are attached as appendices to the review). These tables were based on the templates in the draft NICE unified manual (2014) and the tables in the first safe staffing reviews (on nurse staffing in adult acute units). The data extraction table templates were provided to NICE for agreement on the information to be extracted. Quantitative outcome data extracted were checked by a second analyst. See Appendix B in Evidence Review 2 for further details on these templates.

Narrative and Quantitative Summaries

These follow the guidelines outlined in the draft unified NICE manual (2014). Grading of Recommendations Assessment, Development and Evaluation (GRADE) assessment was not used, as agreed with NICE. They were drafted by one analyst, with another analyst reading through for consistency and clarity.

Evidence Review 3: Safe Midwife Staffing for Maternity Settings: Economic Evidence Review

Critical Appraisal and Quality Assessment

The two included studies were critically appraised using the appropriate checklist for the study type as outlined in the draft 'Developing NICE guidelines - the manual'. On completion of the checklist, two overall ratings are given for the economic study 'applicability' and 'limitations'. The 'applicability' criteria give an overall rating of the economic studies applicability to the NICE reference case (the perspective taken in this review is 'health outcomes in NHS settings').

- Directly applicable – the study meets all applicability criteria, or fails to meet 1 or more applicability criteria but this is unlikely to change the conclusions about cost effectiveness.
- Partially applicable – the study fails to meet 1 or more of the applicability criteria, and this would change the conclusions about cost

effectiveness.
- Not applicable – the study fails to meet 1 or more of the applicability criteria, and this is likely to change the conclusions about cost effectiveness. Such studies would usually be excluded from further consideration and there is no need to continue with the rest of the checklist.

The 'limitations' criteria outlines the methodological quality of the study. A study can be given one of three possible ratings:

- The Minor limitations – the study meets all quality criteria, or fails to meet 1 or more quality criteria but this is unlikely to change the conclusions about cost effectiveness.
- Potentially serious limitations – the study fails to meet 1 or more quality criteria, and this could change the conclusions about cost effectiveness.
- Very serious limitations – the study fails to meet 1 or more quality criteria, and this is highly likely to change the conclusions about cost effectiveness. Such studies should usually be excluded from further consideration.

Economic Evidence Profile

The two included studies are summarised in an economic evidence profile. The profile summarises the key finding from many studies into one table. It includes information on the incremental benefits (both health and non-health) and incremental costs of an option compared to another option, and the cost-effectiveness estimate (incremental cost-effectiveness ratio, or net benefit) of an option compared to another It also gives an overview of the applicability and limitations of each economic study (with reasons). The economic evidence profile will describe any information on the certainty (or uncertainty) of the results.

Evidence Statements

Evidence statements are brief summary statements which outline key findings from the economic evidence review. The evidence statement includes the number of studies identified, the overall quality of the economic evidence (the applicability and limitations of the study) and the direction and certainty of the results.

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

Evidence to Recommendations

When drafting these recommendations the Safe Staffing Advisory Committee discussed evidence from the systematic reviews and an economic analysis report (see the "Availability of Companion Documents" field). In some areas there was limited or no published evidence. In these cases, the Committee considered whether it was possible to formulate a recommendation on the basis of their experience and expertise. The evidence to recommendations tables presented in online Appendix 1 (see the "Availability of Companion Documents" field) detail the Committee's considerations when drafting the recommendations.

The Committee also identified a series of gaps in the evidence – please see Section 3 in the original guideline document for further details.

When drafting the recommendations the Committee took into account:

- Whether there is a legal duty to apply the recommendation (for example, to be in line with health and safety legislation)
- The strength and quality of the evidence base (for example, the risk of bias in the studies looked at, or the similarity of the populations covered)
- The relative benefits and harms of taking (or not taking) the action
- Any equality considerations

Rating Scheme for the Strength of the Recommendations

Strength of Recommendations

- Recommendations using directive language such as 'ensure', 'provide' and 'perform' are used to indicate the Committee was confident that a course of action would lead to safe midwifery care.
- If the quality of the evidence or the balance between benefits and harms means that more time should be taken to decide on the best course of action, the Committee has used 'consider'.
- Recommendations that an action 'must' or 'must not' be taken are usually included only if there is a legal duty (for example, to comply with health and safety regulations).

Cost Analysis

An economic evidence review (Evidence Review 3; see the "Availability of Companion Documents" field) was performed to review the economic evidence for all the questions outlined in the guideline scope. This review aimed to identify primary economic studies which examine different options in terms of their expected net benefits (health and non-health) and their expected costs – their 'cost-effectiveness'. Two studies were included in the evidence review.

One partially applicable study with very serious limitations suggested a 25% reduction in midwifery overload (the number of women exceed the scheduled workload) could be achieved with a 4% increase in budget. A 15% reduction in midwifery overload could be achieved by reducing staffing on Saturday night and all of Sunday and reapplied at peak weekday times with no increase in costs.

One partially applicable study with potentially serious limitations showed higher midwife staffing levels were associated with higher costs of each delivery. An additional midwife would increase the number of deliveries possible in a trust between 18 and 94 deliveries in a year. The study also showed that midwives and other doctors are complements (should be used together) and midwives are consultants are complements. However, it was unclear if midwives and support staff might be complements or substitutes (can replace each other).

Method of Guideline Validation

Not stated

Description of Method of Guideline Validation

Not applicable

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

When drafting these recommendations the Safe Staffing Advisory Committee discussed evidence from the systematic reviews and an economic analysis report (see the "Availability of Companion Documents" field). In some areas there was limited or no published evidence. In these cases, the Committee considered whether it was possible to formulate a recommendation on the basis of their experience and expertise. The evidence to recommendations tables presented in online Appendix 1 (see the "Availability of Companion Documents" field) detail the Committee's considerations when drafting the recommendations.

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

- Safe midwifery staffing for maternity settings helps to ensure safe maternal and neonatal outcomes.
- Safe midwifery care ensures that reliable systems, processes, and practices are in place to meet required care needs and protect people from missed care and avoidable harm.

Potential Harms

Not stated

Qualifying Statements

Qualifying Statements

- This guideline represents the views of the National Institute for Health and Care Excellence (NICE) and was arrived at after careful consideration of the evidence available and the Committee's considerations. Those working in the National Health Service (NHS), local authorities, the wider public, voluntary and community sectors and the private sector should take it into account when carrying out their professional, managerial or voluntary duties.
- Implementation of this guideline is the responsibility of local commissioners and/or providers. Commissioners and providers are reminded that it is their responsibility to implement the guideline, in their local context, in light of their duties to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity and foster good relations. Nothing in this guideline should be interpreted in a way that would be inconsistent with compliance with those duties.
- Those responsible and accountable for staffing maternity services should take this guideline fully into account. However, this guideline does not override the need for, and importance of, using professional judgement to make decisions appropriate to the circumstances.
- This guideline does not cover national or regional level workforce planning or recruitment, although its content may inform these areas.
- This guideline does not address staffing requirements in relation to other staff groups such as maternity support workers, medical consultants, theatre nurses or allied health professionals, although we acknowledge that a multidisciplinary approach and the availability of other staff and healthcare professionals are an important part of safe staffing for maternity services. The guideline takes into account the impact of the availability of other staff groups on midwifery staffing requirements.
- Individually assessing the care needs of each woman and baby is paramount when making decisions about safe midwifery staffing requirements. The assessments should take into account individual preferences and the need for holistic care and contact time between the midwife and the woman and baby.
- Women should have the opportunity to make informed decisions about their care and treatment, in partnership with their healthcare professionals. Healthcare professionals and others responsible for assessing safe midwifery staffing requirements for maternity settings should also refer to NICE's guidance on the components of good patient experience in adult NHS services .
- Women and healthcare professionals have rights and responsibilities as set out in the NHS Constitution for England – all NICE guidance is written to reflect these.

Implementation of the Guideline

Description of Implementation Strategy

Implementation tools and resources to help clinicians put the guideline into practice are available on the National Institute for Health and Care Excellence (NICE) Web site (see also the "Availability of Companion Documents" field).

See the NICE Web site for details of the NICE endorsement programme for further information about toolkit endorsement.

See also Section 7 in the original guideline document for specific auditing indicators and outcome measures for safe midwifery staffing.

Implementation Tools

Audit Criteria/Indicators

Clinical Algorithm

Foreign Language Translations

Mobile Device Resources

Patient Resources

Resources

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Staying Healthy

IOM Domain

Patient-centeredness

Safety

Identifying Information and Availability

Bibliographic Source(s)

National Institute for Health and Care Excellence (NICE). Safe midwifery staffing for maternity settings. London (UK): National Institute for Health and Care Excellence (NICE); 2015 Feb 27. 65 p. (NICE guideline; no. 4).

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2015 Feb 27

Guideline Developer(s)

National Institute for Health and Care Excellence (NICE) - National Government Agency [Non-U.S.]

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National Institute for Health and Care Excellence (NICE)

Guideline Committee

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Financial Disclosures/Conflicts of Interest

Members of the Safe Staffing Advisory Committee who made declarations of interest are listed in section 6 of the original guideline document .

Guideline Status

This is the current release of the guideline.

This guideline meets NGC's 2013 (revised) inclusion criteria.

Guideline Availability

Electronic copies: Available from the National Institute for Health and Care Excellence (NICE) Web site . Also available for download in ePub or eBook formats from the NICE Web site .

Availability of Companion Documents

The following are available:

- Warttig S, Little K. Decision support approaches and toolkits for identifying midwife staffing requirements. Evidence review 1. London (UK): National Institute for Health and Care Excellence (NICE); 2014. 29 p. Electronic copies: Available from the National Institute for Health and Care Excellence (NICE) Web site .
- Safe midwifery staffing for maternity settings: the relationship between midwifery staffing at a local level and maternal and neonatal outcomes, and factors affecting these requirements. Evidence review 2. London (UK): Bazian Ltd.; 2014. 182 p. Electronic copies: Available from the NICE Web site .
- Hayre J. Safe midwife staffing for maternity settings. Evidence review 3: economic evidence review. London (UK): National Institute for Health and Care Excellence (NICE); 2014. 41 p. Electronic copies: Available from the NICE Web site.
- Safe midwife staffing for maternity settings. NICE safe staffing guideline. Linking evidence to recommendations. London (UK): National Institute for Health and Care Excellence (NICE); 2014 Oct. 15 p. Electronic copies: Available from the NICE Web site .

- Safe midwifery staffing for maternity settings. Baseline assessment tool. London (UK): National Institute for Health and Care Excellence (NICE); 2015 Mar. Electronic copies: Available from the NICE Web site .
- Safe midwifery staffing for maternity settings. Resource impact commentary. (UK): National Institute for Health and Care Excellence (NICE); 2015 Feb. 13 p. Electronic copies: Available from the NICE Web site .
- Developing NICE guidelines: the manual 2014. London (UK): National Institute for Health and Care Excellence (NICE); 2014 Oct. Electronic copies: Available from the NICE Web site .

Section 7 in the original guideline document includes specific auditing indicators and outcome measures for safe midwifery staffing.

Patient Resources

The following is available:

- Safe midwifery staffing for maternity settings. Information for the public. London (UK): National Institute for Health and Care Excellence; 2015 Feb. 5 p. (NICE guideline; no. 4). Electronic copies: Available from the National Institute for Health and Care Excellence (NICE) Web site . Also available for download in ePub or eBook formats from the NICE Web site . Also available in Welsh from the NICE Web site .

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